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54 **Hybrid surface emitting laser and detector.**

57 The present invention is a combined surface emitting semiconductor laser (18) and photodetector (30, 32) in a single housing with the photodetector positioned to detect light emitted from the surface emitting laser (18) and reflected off of a medium. The surface emitting laser (18) is mounted on the top surface of a chip (22) which includes at least one set of two photodetectors (30, 32) for detecting a reflected beam. At least two photodetectors (30, 32) are used so that spacial variations in the reflected beam can be detected for focusing and tracking when the device is used in an optical head. Photodetectors (30, 32) are arranged to intersect a diffracted beam from a hologram lens used in an optical head. A rear emission photodetector (28) for monitoring the power of the surface emitting laser (18) is positioned so that it will not receive diffracted light which will interfere with its operation.

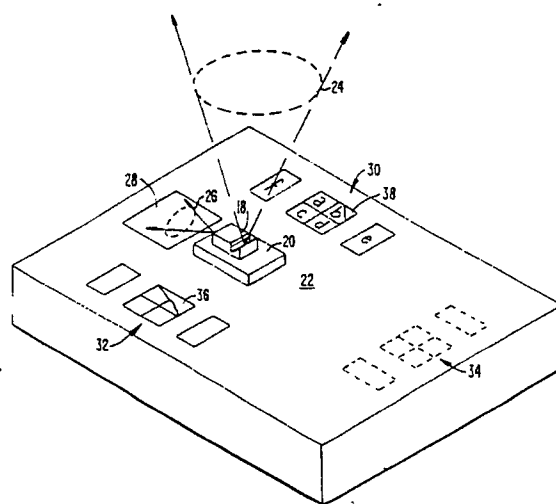


FIG. 3.

**EP 0 348 950 A3**



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	NEC RESEARCH & DEVELOPMENT, no. 89, April 1988, pages 39-45, Tokyo, JP; YUZO ONO et al.: "A compact optical head using holographic optical element for compact disk players" * Chapters 1,2; figures 1-4 * ---	1,2,6,8	H 01 S 3/02 H 01 L 31/12 H 01 S 3/19 G 11 B 7/12
A	EP-A-0 244 827 (LEE, WAI-HON) * Page 2, line 17 - page 5, line 8; page 6, lines 11-21; page 12, line 2 - page 14, line 3; page 15, lines 6-18; page 16, lines 9-28; page 20, line 25 - page 22, line 17; figures 1-5,7,9,16,17 * & US-A-4 731 772 (LEE, WAI-HON) (Cat. D,A) ---	1-3,7-9	
A	EP-A-0 245 712 (LEE, WAI-HON) * Page 4, line 21 - page 6, line 12; page 7, lines 8-23; figures 3,4,8a * ---	1-3,8	
A	US-A-4 297 653 (DONALD R. SCIFRES et al.) * Column 2, line 59 - column 3, line 41; figures 1A-2 * -----	1,4,8	TECHNICAL FIELDS SEARCHED (Int. Cl.5)  H 01 S H 01 L G 11 B
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>30-03-1990</b>	Examiner <b>GNUGESSER H.M.</b>
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	